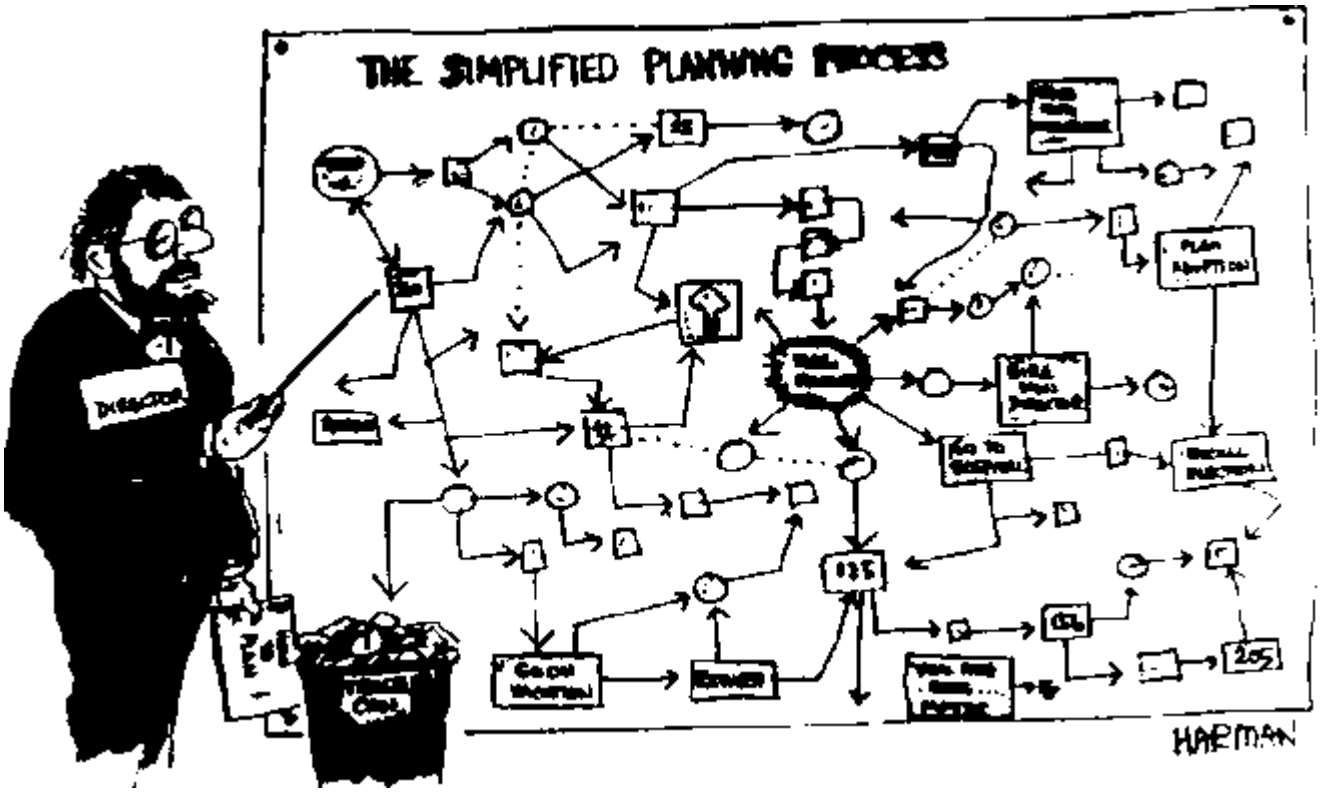
Preparing for Sea Level Rise: Planning Sustainable Communities in Marin County, California

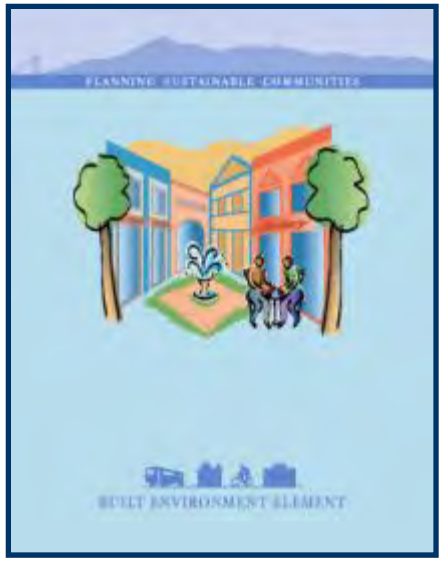
BCDC, ABAG, San Francisco Bay National Estuarine Research Reserve

“*Planning is best done in advance*”
- Anonymous



Marin Countywide Plan

Natural Systems and Agriculture



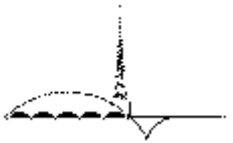
Built Environment

Socioeconomic

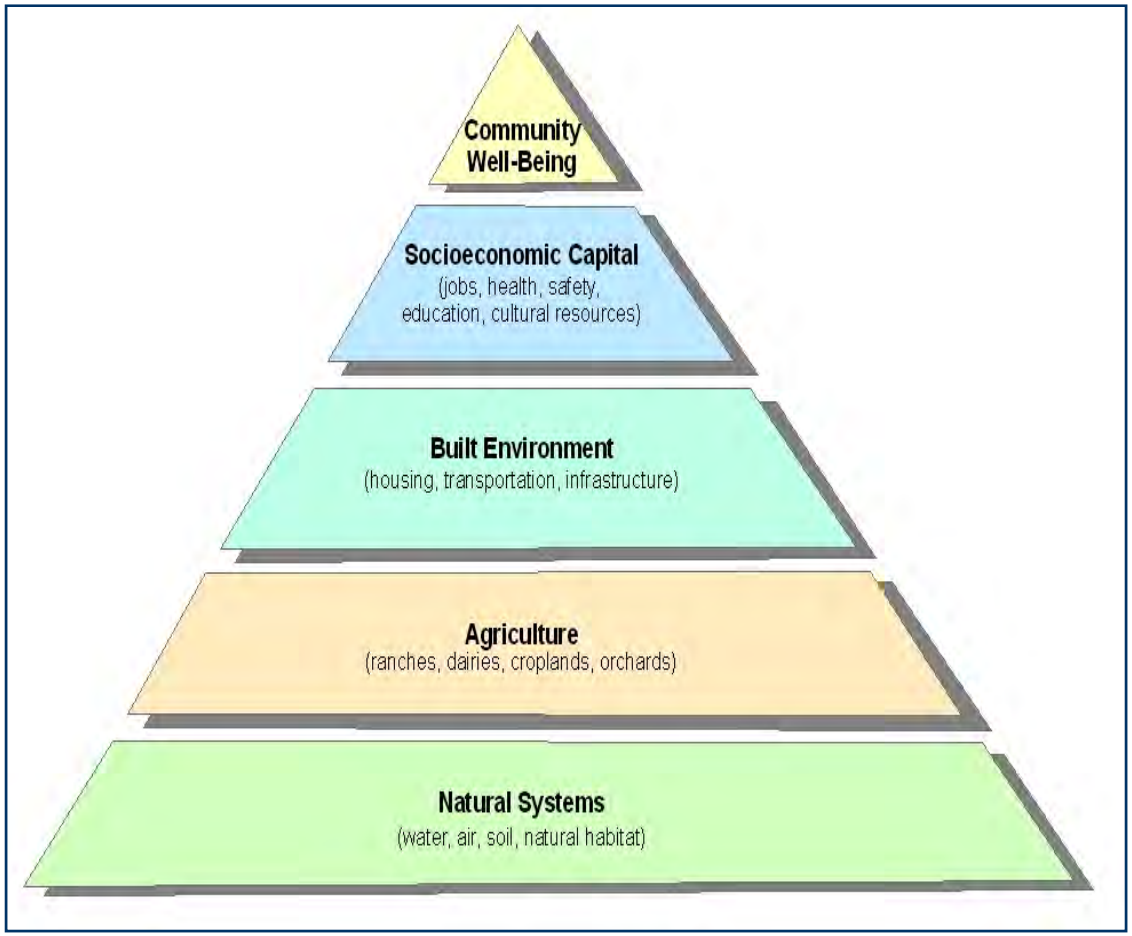
“Planning sustainable communities”
is the overarching theme of the CWP update

CWP Definition of Sustainability:

- Aligning our built environment and socioeconomic activities w/ the natural systems that support life
- Adapting human activities to the constraints and opportunities of nature
- Meeting the needs of both the present and the future



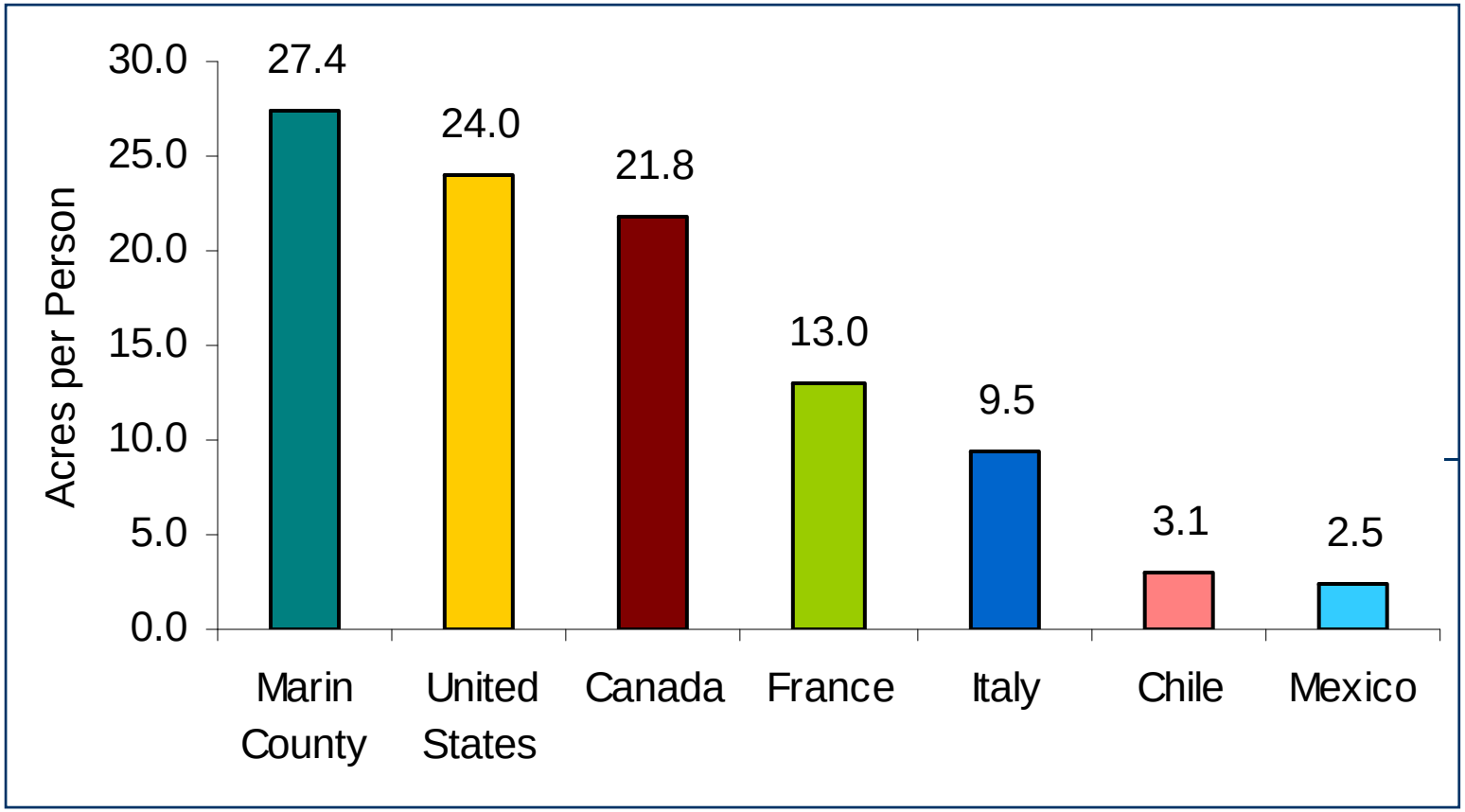
Marin Countywide Plan's Framework for Sustainability



What is an Ecological Footprint?

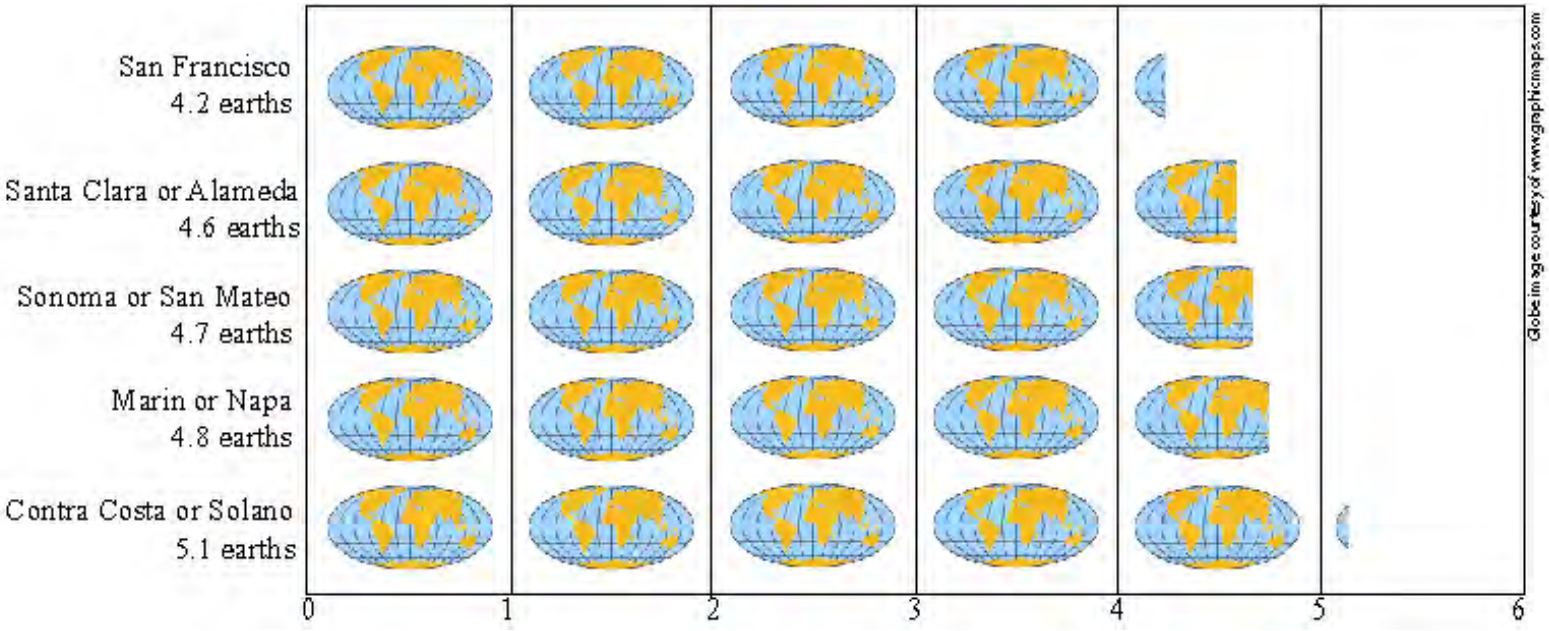
The ***ecological footprint*** is the amount of land and water area a person or human population needs to provide the resources required to sustainably support itself and to absorb its wastes, given prevailing technology.

Ecological Footprint Comparison



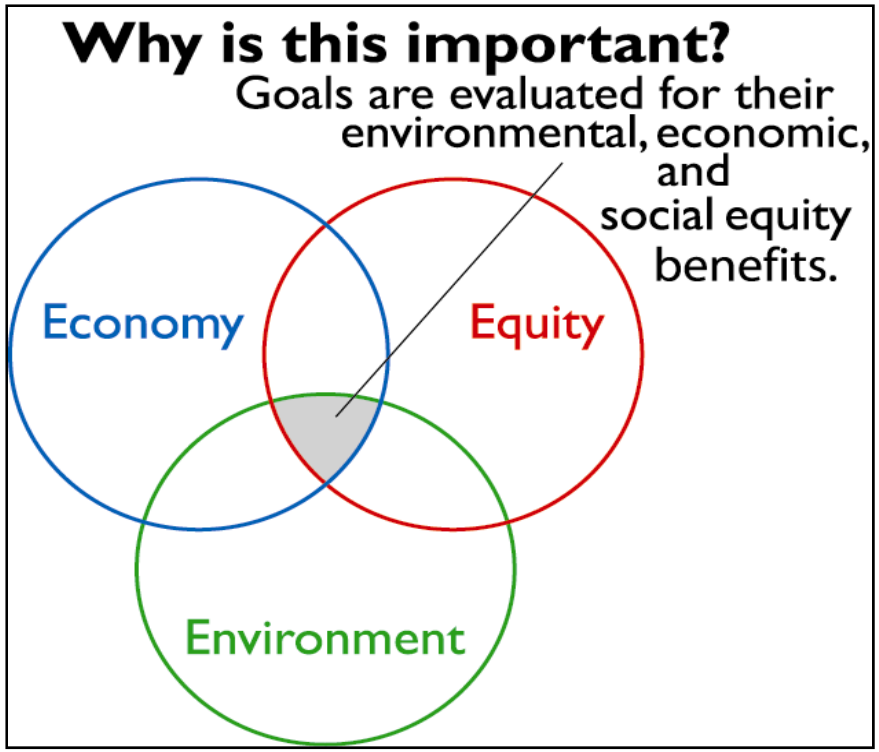
How Does Marin's Footprint Compare to Other San Francisco Bay Area Counties?

Number of earths that would be required to serve the footprint of each S.F. Bay Area County:



Countywide Plan





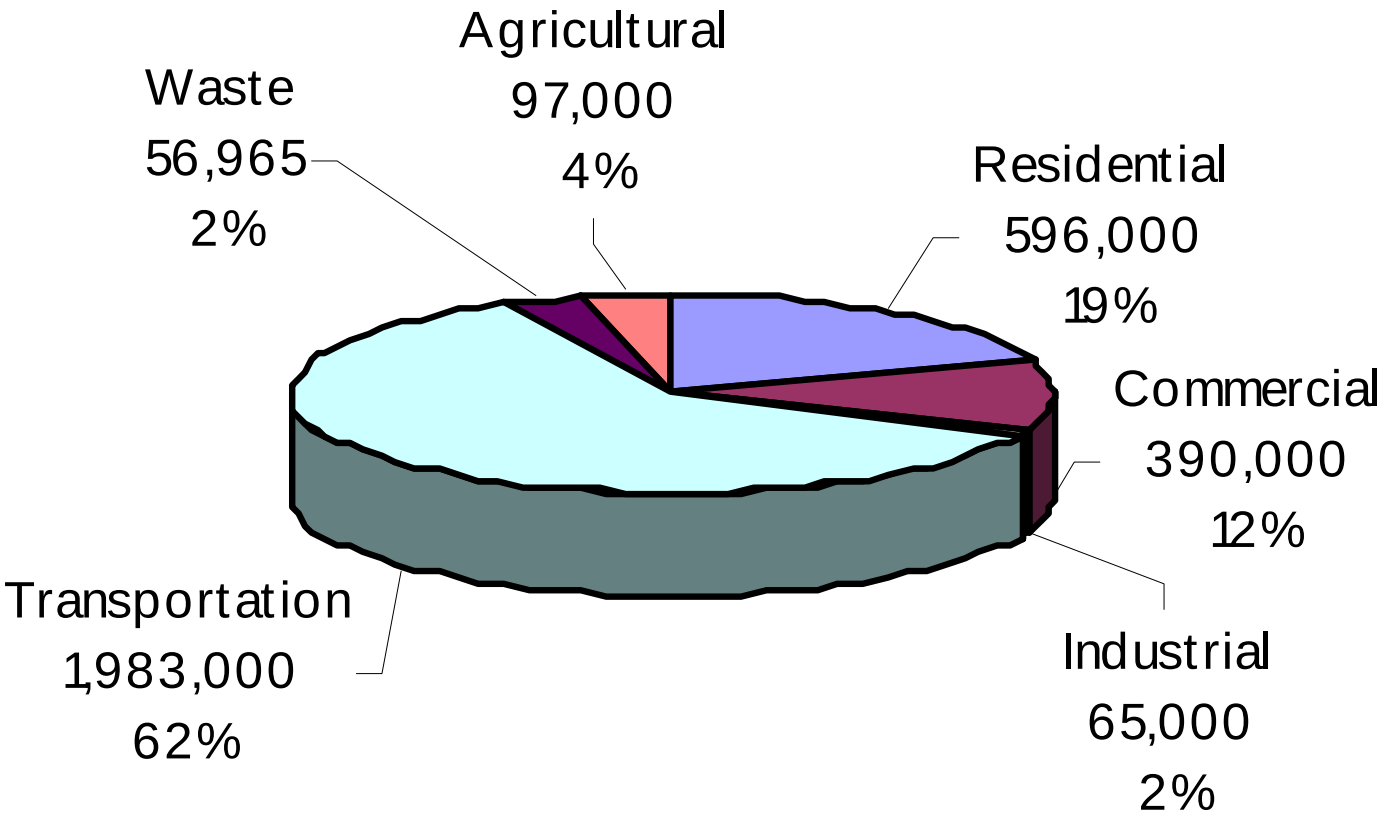
- Each element addresses:
- What are the desired outcomes?
- Why it is important?
- How will results be achieved?
- How will success be measured?

Natural Systems & Agriculture

Topics in the Natural Systems & Agriculture Element

- Biological resources
- Water resources
- Environmental Hazards
- Atmosphere and climate
- Open space
- Trails
- Agriculture and food

2005 Countywide GHG Emissions:
Tons CO2e & Percent by Sector



Climate Change –
How will success be measured?

Set Target to Reduce Emissions

Indicator	Benchmark	Targets
Amount of GHG Emissions Countywide	2,634,000 tons CO2 in 1990	Reduce 15-20% by 2020.

TOP STORY: GLOBAL WARMING

Marin warned to not develop its lowlands

Official: Bay waters may rise 3 feet, flood areas by century's end

By Brad Breithaupt
Marin Independent Journal

Global warming could raise the level of San Francisco Bay by more than 3 feet by the end of the century, flooding low-lying areas in Marin and elsewhere.

That warning Tuesday from Will Travis, executive director of the San Francisco Bay Conservation and Development Commission, came as county supervisors reviewed how to gird for climate change.

marinij.com
Comment on this story at marinij.com

"Its impacts aren't limited to penguins in Antarctica or polar bears in Alaska, it's going to affect us profoundly here," Travis told the county board.

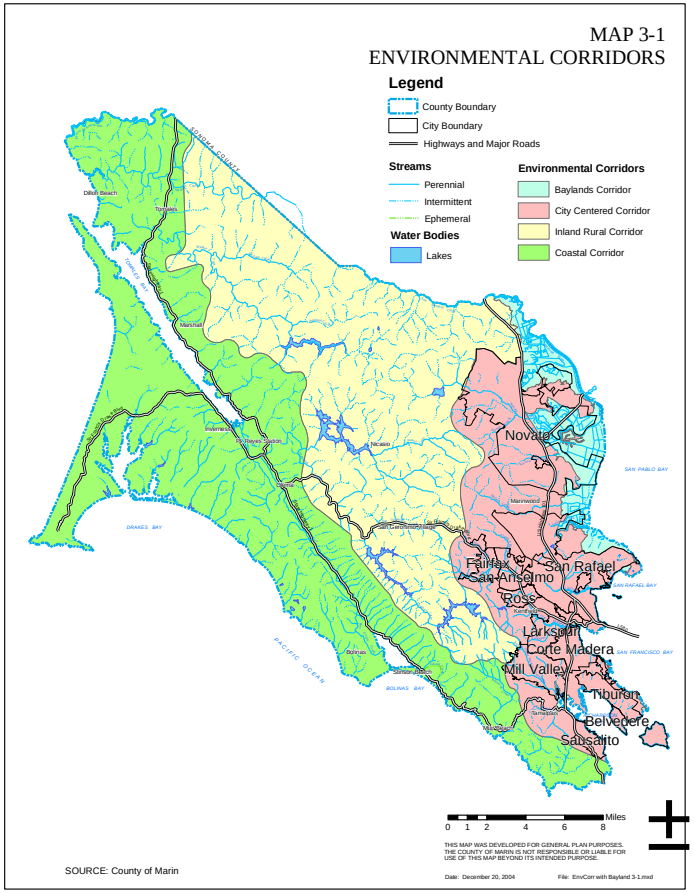
Travis did not detail Marin trouble spots, but his agency's maps indicate shoreline areas such as Hamilton Field, Highway 37 and low-lying portions of the lower Ross Valley, San

'We are going to have to build levees ... we are going to have to build lots of levees,' Will Travis of the San Francisco Bay Conservation and Development Commission told Marin supervisors.

MORE ON A2

> Coastal planners warned of sea-rise threats

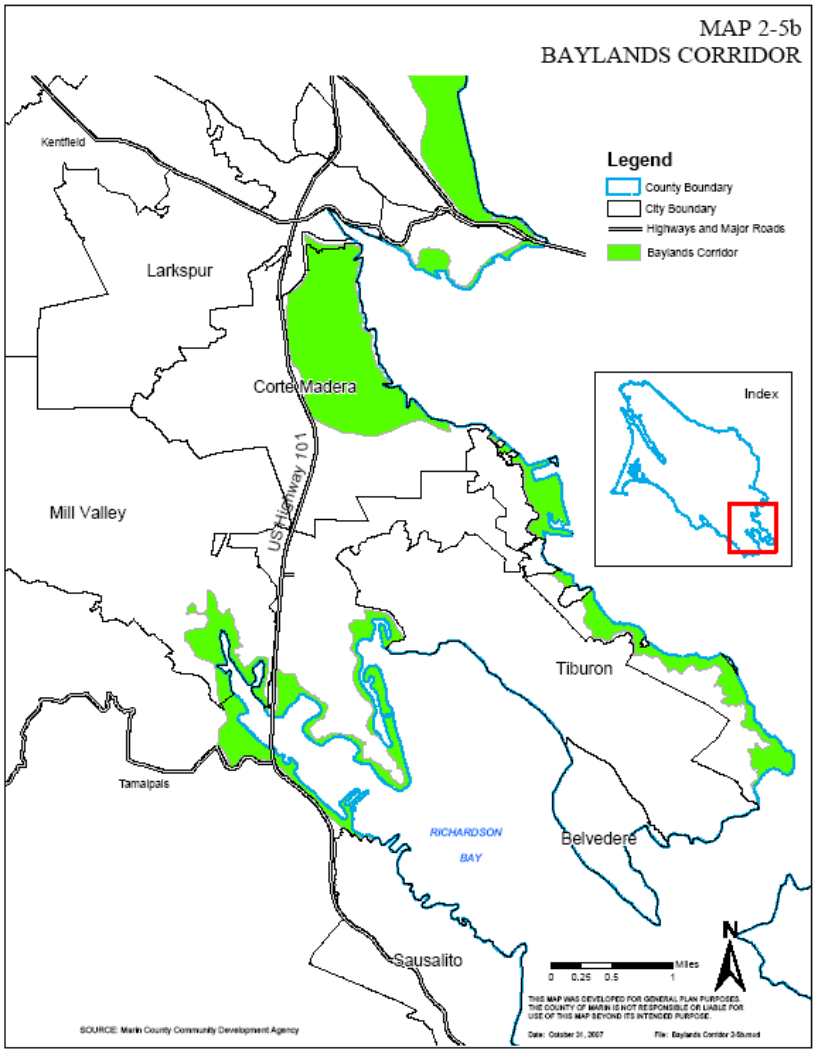
Environmental Corridors



- There were three environmental corridors:
  - The City-Centered Corridor
  - The Inland Rural Corridor
  - The Coastal Corridor
- A 4th, Baylands Corridor was added in 2007.

The Baylands Corridor: Adapting to Sea Level Rise

- Limits development
- Protects important baylands and large adjacent uplands
- Additional lands threatened by sea level rise are to be added to the Baylands Corridor



One Meter Sea Level Rise in Marin

Baylands Corridor - Future Studies

- Conduct Mapping and Analysis to determine whether additional parcels should be added to or omitted from the Baylands Corridor. In particular, historic marshland in the Richardson Bay area should be analyzed

Climate Change Overall Goals –
What are the Desired Outcomes?

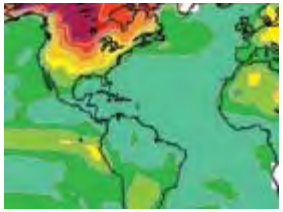
- Reduce GHG emissions
- Monitor climate change
- Adapt to climate change

Climate Change –
How will results be achieved?

Policies for reducing GHG Emissions:

- Increase Renewable Energy
- Conserve Electricity
- Change Commuting & Driving Patterns
- Divert Solid Waste
- Increase Biocapacity of Open Space & Agriculture
- Increase Local Food & Sustainable Agriculture

Climate Change –
How will results be achieved?



Adaptive Climate Change policies:

- Plan for sea level rise
- Seek levee assistance
- Consider future threat of sea level rise
- Establish a climate change planning process
- Revise and implement floodplain ordinance

Modify Standards

- ***Modify Construction Standards.*** Amend the Development Code to incorporate construction standards consistent with the policies of BCDC's Bay Plan for any areas subject to increased flooding from a rise in sea level.

Study the Effects of Climate Change

- **Built Environment**: Effect of flooding and rising sea level on sewage systems, property, and infrastructure.
- **Water Resources**: Runoff, changes in precipitation, increases and decreases in drought, salinity changes, sea level rise, and shifting seasons.
- **Agricultural and Food Systems**: Food supply, economic impacts, and effect on grazing lands.
- **Public Health**: Temperature-related health effects, air quality impacts, extreme weather events, and vector-, rodent-, water-, and food-borne diseases.

Anticipate Sea Level Rise

- Work with the U.S. Geological Survey, the San Francisco Bay Conservation and Development Commission, and other monitoring agencies to track bay and ocean levels; and
- Utilize estimates for mean sea level rise to map potential areas subject to future inundation (including by updating information about watershed channel conditions and levee elevations).

Prepare Response Strategies

- Limit development such that coastal wetlands are able to migrate inland in response to sea level rise.
- Promote the restoration of wetlands and riparian areas to provide capacity for high water and flood flows.

Relocate Facilities and Seek Assistance

- Assess development areas subject to sea level rise and increased flooding, develop a retreat strategy for the relocation of facilities in low-lying areas.
- Seek levee assistance. Pursue funding for levee reconstruction in those areas threatened by sea level rise.

Ross Valley Watershed Example

- On December 31, 2005, Ross Valley experienced a 100-year storm.
- The area has experienced three 100-year storms in the past three decades.
- Much of the Ross Valley storm drainage system can be overwhelmed by a storm that has a 20% chance of occurring in any given year.

Creek Restoration

- A concrete channel and other private structures have regrettably replaced riparian vegetation on the creek corridor.
- *The Flood Protection & Creek Restoration Program* will:
  - Include new guidelines for development and tree removal to protect natural spaces.
  - Make permanent improvements to fish passage and aquatic habitat - restore vegetative cover vital to survival for native Chinook salmon and steelhead.
  - Identify areas to create features such as pocket parks, creek overlooks, or areas with interpretive signage.

Flood Protection

- Balance structural solutions to control water flow with non-structural management solutions such as the Early Warning Call System and using native plants to enhance bank stabilization efforts.
- Develop a watershed-wide approach that respects natural creeks.

Built Environment

Topics in the Built Environment:

- Community Development
- Design
- Energy and Green Building
- Mineral Resources
- Housing
- Transportation
- Noise
- Public Facilities and Services
- Planning Areas

Greening our Built Environment

- Limit sprawl by restricting development in environmentally sensitive areas
- Require mixed-use in commercial areas
- Housing Overlay Designation – Focus affordable & workforce housing near jobs, transit, services
- Require Green Building
- Retrofit existing buildings

Marinwood Shopping Center

Before:

After:

Another Potential Infill Site

Before:

After:

San Quentin Vision Plan
Land Use Plan

Utilize European design approaches

Amphitheater park

Boulevard

Affordable housing

Pedestrian-only optional area

Ridge open space

School / Ballfields

World-class cultural arts facility

Central plaza

Waterfront park

Road along waterfront

Historic park

March 10, 2005

Map 3-36
San Quentin Re-use Concepts


How do we Green Transportation?

GREENING Transportation

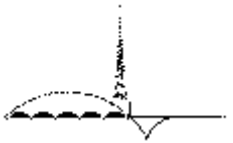
How will results be achieved?

- Reduce Vehicle Miles Traveled (VMT)
- Reduce Single Occupancy Automobile Trips
- Support regional trail initiatives, such as SMART

SONOMA-MARIN SMART AREA RAIL TRANSIT

GREENING Transportation

- Fund projects that reduce fossil-fuel use and single-occupancy auto trips
- Enact telecommuting, satellite work-centers, and alternate work schedules
- Encourage live-work, cottage industry, and home occupation



GREENING Transportation

- Provide incentives for using public transit, vanpools, carpools, car sharing, bicycles, walking, and other transportation alternatives

- Reduce parking requirements for projects located near transit or participating in trip reduction programs

Marin County Employee Commute Alternatives Program

- One year pilot program initiated in September 2007
- $4 daily incentive for employees who commute via walking, bicycling, carpool, vanpool and public transit

First Quarter Results:

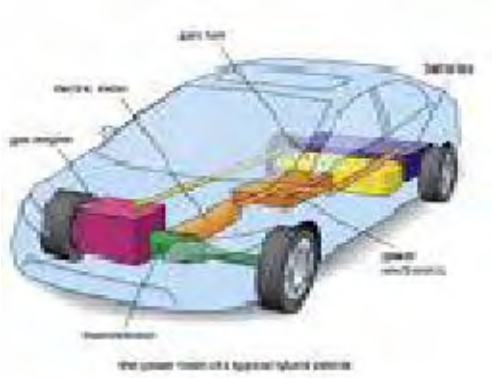
- 19% employee participation
- Total CO_2 reduction = 305 tons = 12,000 fewer cars
- Avg. CO_2 reduction per commute day = 5.3 tons

GREENING Transportation

- Switch to zero-emission or other low-emission vehicles
- Support infrastructure necessary for alternative fuel vehicles, including fueling and charging stations
- Broaden the use of traffic-mitigation fees to include alternative-mode projects to mitigate travel demand and congestion
- Consider imposing tolls, congestion pricing, parking fees, gas taxes, and residential perking permit limits to encourage alternatives to single occupancy

Fuel Efficiency Programs

- Hybrid vehicles – Between 2002 and 2006, Public Works purchased 40 hybrids



- Biodiesel Pilot – In 2004, a pilot program began to test biodiesel fuel for diesel vehicles in the County fleet

Marin County Non-motorized Transportation Pilot Program

- Marin received $25 million
- Targets mode shift to increase bicycling & walking trips to work, school, and errands through 2010
- Results will be reported to Congress in 2011

Proposed Cal Park Hill Tunnel

www.walkbikemarin.org

Socioeconomic

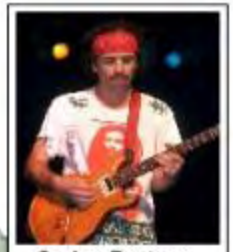
Topics in the Socioeconomic Element:

- Economy
- Childcare
- Public Safety
- Community Participation
- Diversity
- Education
- Environmental Justice
- Public Health
- Arts and Culture
- Historical and Archaeological Resources
- Parks and Recreation

Cultural Landscape of Marin County


Anne Lamott, writer


Charles Schwab, CEO


Carlos Santana, musician


Frank Lloyd Wright, architect


Peter Coyote, actor


Sim Van der Ryn, architect

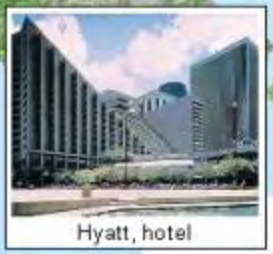

Gary Fisher, bike innovator


Grateful Dead, band


Bonnie Raitt, musician


George Lucas (with friend), filmmaker


Metallica, band


Hyatt, hotel

Socioeconomic Element

Indicator	Benchmark	Targets
Number of certified “green” businesses	0 in 2000	Increase to 250 by 2010, and 400 by 2015

Can the Plan Reduce Marin's GHG Emissions and Ecological Footprint?

Meeting just the energy and transportation targets wo

- Reduce Marin's footprint by nearly one million global acres per year, equal to a 15% reduction
- Reduce GHG Emissions by 15-20%
- Still not be equal to Italy's footprint, but would help reduce the over-consumption of Earth's biological capacity and serve as a model for other affluent areas.

Implementing programs that link people, the economy and the environment

The Community Development Agency offers a broad array of programs to help move Marin towards a more sustainable future including:

- **Solar Incentives**
- **Climate Protection**
- **Energy Efficiency**
- **Green Business**
- **Green Building**
- **Waste Tire Education**
- **Sustainable County Operations**
- **Sustainability in the Countywide Plan**

SUSTAINABILITY TEAM
COUNTY of MARIN

COMMUNITY DEVELOPMENT AGENCY
ALEX HINDS, DIRECTOR

For more info. contact the Marin County Community Development Agency at one of the numbers below, or visit:
www.sustainablemarin.org

Dawn Weisz	*Sustainability Team Coordinator*	**507-2706**
Dana Armanino	*Green Business & Energy Coordinator*	**499-3292**
Alec Hoffmann	*Green Building Program Coordinator*	**507-2659**
Omar Peña	*Sustainability Aide*	**507-2797**

Promoting Renewable Energy

Integrating Solar & Green Building into Planning

Solar Results

- **$50,000** in solar rebates have been distributed since last August 2005
- Annual solar installations countywide grew from **8** in 2000 to **138** in the year 2005
- Currently there are over **800** systems countywide
- And these are reducing GHG emissions by **2,465** tons annually

Green Building Results

- New homes exceeded State energy standards by an average of 20%
- Remodels exceeded State standards by an average of 10%
- 10 new homes reduce GHG emissions by 1,300 lbs annually
- More than 50 woodsmoke rebates have been awarded
- 75,000 tons of diverted waste reduced GHG emissions by 150,000 tons

Promoting Green Business

Green business standards include:

- Reduce energy use, water use, waste and pollution generation.

Sustainable Partner Business standards include:

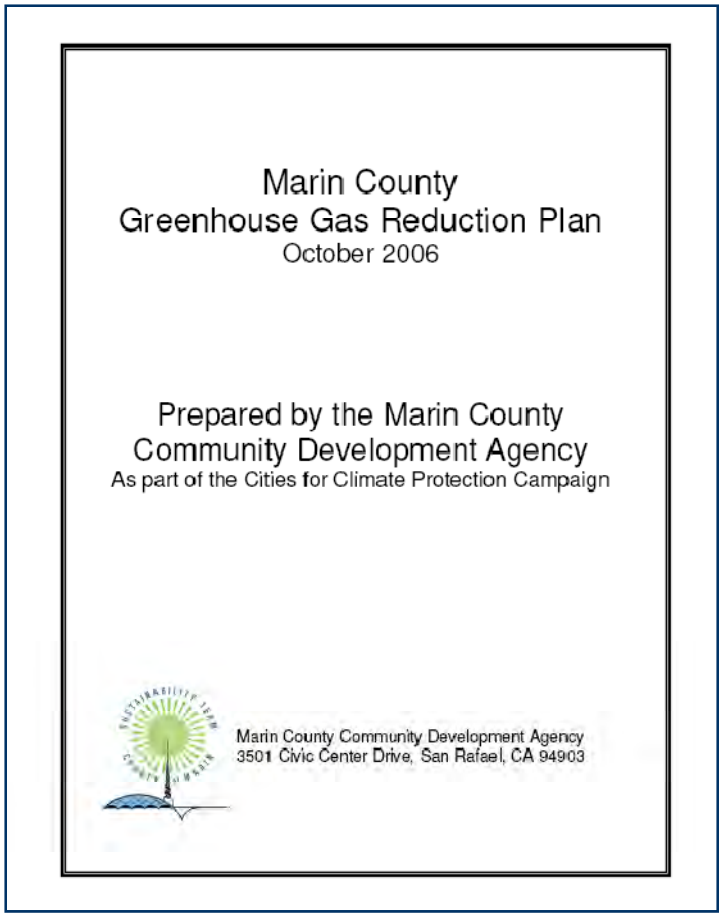
- Design for zero waste.
- Commit to volunteerism and/or philanthropy.
- Conduct education about environmental a
  issues.
- Voluntarily comply with Marin's
  minimum wage ordinance.

Promoting Climate Protection

Joined ICLEI's five step program in 2002:

- ✓ 1. Assessed Marin's greenhouse gas (GHG) emissions
- ✓ 2. Set target to reduce emissions
- ✓ 3. Developed implementation plan to meet the target
- ➢ 4. Implement GHG reduction plan
- ✓ 5. Reassess GHG emissions

Implementation Plan to Reduce Emissions



- Plan adopted in Sept. 2006
- Measures include:
  1. Buildings Energy Use
  2. Transportation
  3. Waste Management
  4. Land Use

For more information contact the Marin County Community Development Agency

www.marinsustainability.org

www.future-marin.org

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